

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6: F16M 1/00 // 5/00		A1	(11) International Publication Number: WO 97/47914
			(43) International Publication Date: 18 December 1997 (18.12.97)
(21) International Application Number: PCT/SE97/01026		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 12 June 1997 (12.06.97)			
(30) Priority Data: 9602349-4 14 June 1996 (14.06.96) SE			
(71) Applicant (for all designated States except US): TAU POWER AB [SE/SE]; P.O. Box 186, S-244 21 Kävlinge (SE).			
(72) Inventor; and			
(75) Inventor/Applicant (for US only): PERSSON, Lars [SE/US]; 25 Arnold Terrace, Mablehead, MA 01945 (US).			
(74) Agents: HOLMQVIST, Lars, J., H. et al.; Albihn Holmqvist AB, P.O. Box 4289, S-203 14 Malmö (SE).			

Published

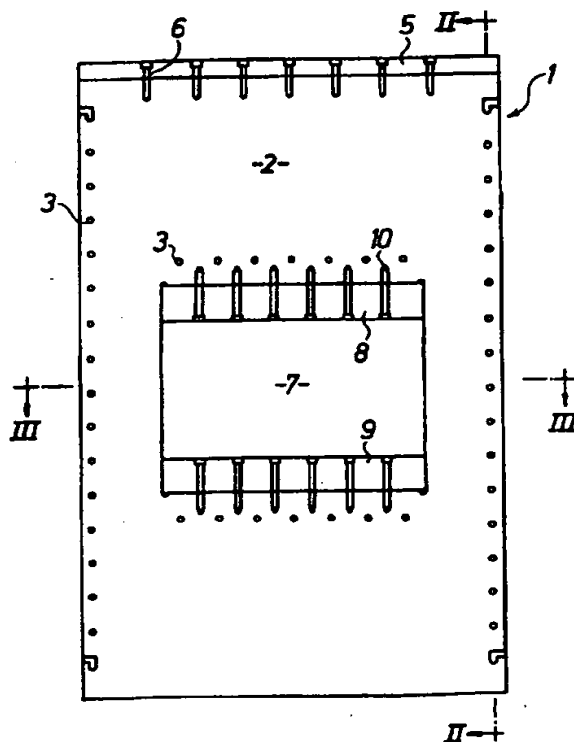
With international search report.

In English translation (filed in Swedish).

(54) Title: MACHINE FRAME

(57) Abstract

The invention relates to a machine frame (2), e.g. hydraulic presses, and more specifically to frames of the type exhibiting vertical, parallel plates held together by connecting devices. According to the invention, the plates have through holes (3) and the fastening means comprise threaded rods, placed in said holes and holding said plates at definite distances from each other. Preferably, the threaded rods are fastened by means of nuts on both sides of the plates (2). The vertical plates may exhibit through recesses (7) for machinery, e.g. a hydraulic press. The invention teaches an arrangement enabling plates and connecting devices of standard types to be used, and eliminates the need for special spacer means between the plates to maintain a definite spacing between them.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LJ	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

5

INVENTION DENOMINATION: MACHINE FRAME

10 Field of the invention

The present invention relates to a frame for machines, e.g. hydraulic presses, and more specifically to frames of the type exhibiting vertical, parallel plates held together by connecting devices. The invention teaches an arrangement enabling plates and connecting devices of standard types to be used, and eliminates the need for special spacer means between the plates to maintain a definite spacing between them.

State of the art

It is, as such, previously known to utilise parallel, vertical plates in frames for various machines. The plates are held at suitable distances from each other with the aid of spacer means, or are placed against each other. The plates are held together by welds or by bolts and nuts. With this type of arrangement follows the problem of providing bolts of appropriate length and spacer means of appropriate thickness for each model of the frame. This entails disadvantages from a manufacturing aspect, as the different spacer means and bolts have to be manufactured and kept in stock.

The present invention solves the above problem by providing through holes in the vertical, parallel plates. Rods are provided through the holes, thereby holding the plates with the appropriate spacing, without the need for any dedicated spacer means. The distance between the plates can then be arbitrarily selected and the through rods may only have to be cut into shorter lengths if needed.

Summary of the invention

The present invention thus provides a machine frame, comprising vertical plates secured to each other by fastening means.

According to the invention, the plates have through holes, and the fastening means comprise threaded rods, placed in said holes and holding said plates at definite distances from each other by means of nuts, located on both sides of the plates.

The vertical plates may have through recesses for machinery, e.g. a hydraulic press.

The present invention is defined in detail by the accompanying claims.

5 **Brief description of the drawings**

The invention will be described in detail below, with reference to the accompanying drawings, of which

Fig. 1 is a vertical front view of an embodiment of the frame according to the
10 present invention;

Fig. 2 is a cross-sectional view along the line II-II of Fig. 1;

Fig. 3 is a cross-section along the line III-III of Fig. 1; and

Fig. 4 is a horizontal top view of the frame.

15 **Detailed description of a preferred embodiment**

The present invention will be described below, with reference to its use in connection with a hydraulic press, but it will be appreciated that the invention may be used also for other types of machinery.

Hydraulic presses are used for the manufacture of numerous products and are
20 of course needed in many different sizes. It would be advantageous if the various sizes could be constructed from components having a standardised shape, enabling the size to be varied by using a different number of components and by varying the distance between them.

With reference to the drawings, a frame 1 is shown, which is suitable for a
25 hydraulic press. The actual machinery equipment for the hydraulic press, i.e. pressure cylinders, pressing dies, etc. are of conventional design and not shown in the drawings, for increased clarity in illustrating the idea of the invention. The frame 1 mainly comprises vertical and parallel plates 2. In the embodiment shown, the number of plates is five. The plates 2 have been provided with a number of
30 through holes 3. Running through these holes 3 are threaded rods 4, of which only one rod 4 is shown in Fig. 2. The number of vertical plates 2 and threaded rods 4 may of course be varied as necessary.

The plates 2 are held at correct distances from each other by means of nuts
11, which are placed on both sides of each plate 2, and which are tightened to fix
35 the plates in position. The distance between the plates can be easily adjusted by loosening the nuts and screwing them in one direction or the other to displace the plate located between them. In this manner, the distance between the plates 2 may be set completely arbitrarily.

A frame 1 according to the present invention can be constructed solely from
40 these vertical plates and threaded rods. The latter will hold the plates at a definite

distance from each other, without requiring any spacer means between the plates. The distance between the plates may be varied arbitrarily.

In order to further stabilise the frame, and to fasten items of machinery, a horizontal top plate 5 may be attached to the upper side of the frame. The plate 5 is shown in a horizontal top view in Fig. 4. The top plate 5 may conveniently be fastened by screws 6, as shown in the drawings.

The frame may also be equipped with a bottom plate (not shown), which may be similar to the top plate 5 and fastened in a corresponding manner.

If the frame 1 according to the invention comprises only two vertical plates, the machinery may be arranged between them in a suitable manner. If more than two plates are included, it is however convenient for the vertical plates 2 to have through recesses 7 for housing the machinery. If the machinery consists of a hydraulic press, the frame preferably also includes an upper press table 8 and a lower press table 9 for fastening the hydraulic press (not shown). The press tables 8 and 9 are thereby provided with entrance holes for the hydraulic and other connectors of the hydraulic press. The press tables are fastened to the different plates with their respective screws 10.

The frame according to the invention is transported in a disassembled condition in order to require as little space as possible. The frame is subsequently assembled on location by raising the vertical plates, fixing them with suitable spacing and then fastening the threaded rods. Thereupon, if applicable, the top plate, the bottom plate and the press tables are mounted. Finally, the actual machinery is fitted and connected.

The present invention thus provides a machine frame with major advantages compared to the prior art. The frame is manufactured from a number of standardised components, i.e. vertical plates, threaded rods and, if necessary, top and bottom plates, which may be easily assembled in various ways for different applications. This will lower the manufacturing cost, as a smaller number of different parts has to be manufactured. Separate spacer means, for maintaining the distance between the plates, do not have to be manufactured at all. The frame according to the invention is also easy to transport in its disassembled state, which reduces the spatial needs. The machine frame is easy to assemble on location.

The invention has been described in detail with reference to a hydraulic press, but may also be used for other machinery. As has been mentioned above, and as is evident to the person skilled in the art, numerous modifications and variations may be applied without departing from the scope of the invention, as defined in the following claims.

CLAIMS

1. Machine frame (1), comprising vertical plates secured to each other by
5 fastening means, **characterized in** that the plates (2) have through holes (3), and
that the fastening means comprise threaded rods (4), placed in said holes (3) and
holding said plates (2) at definite distances from each other by means of nuts (11),
located on both sides of the plates (2).
2. Machine frame according to claim 1, **characterised in** that a horizontal top
10 plate (5) is attached to the top sides of the vertical plates (2).
3. Machine frame according to claim 1 or 2, **characterised in** that a horizon-
tal bottom plate is attached to the bottom sides of the vertical plates.
4. Machine frame according to any one of the preceding claims, **character-**
ised in that the vertical plates (2) have through recesses (7) for housing machinery.
- 15 5. Machine frame according to claim 4, **characterised in** that upper and
lower press tables (8, 9) are attached to the upper and lower sides, respectively, of
the recesses (7).
6. Machine frame according to any one of the preceding claims, **character-**
ised in that connectors to the machinery are arranged in entrance holes in the press
20 tables.
7. Machine frame according to any one of the preceding claims, **character-**
ised in that the machinery is a hydraulic press.

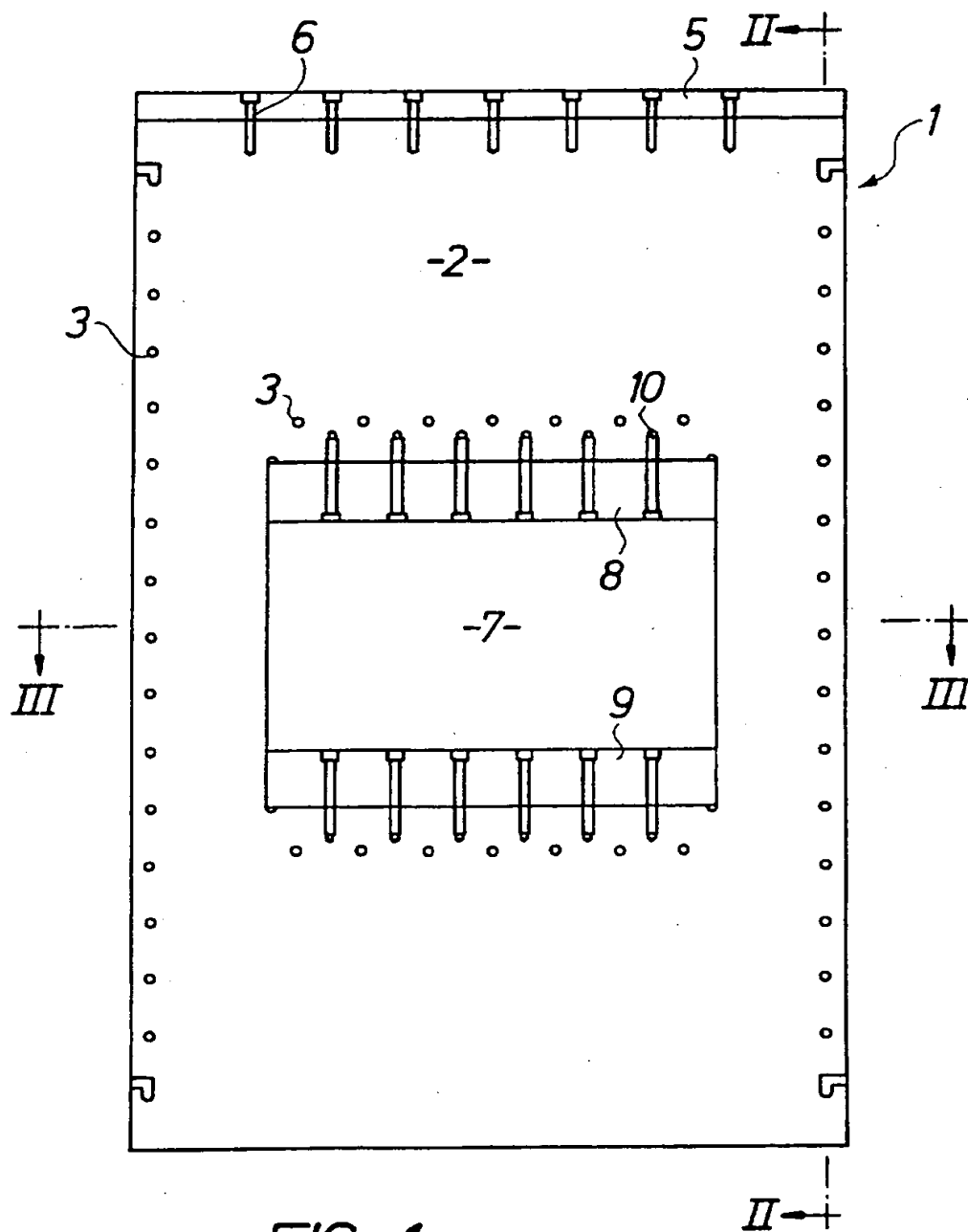


FIG. 1

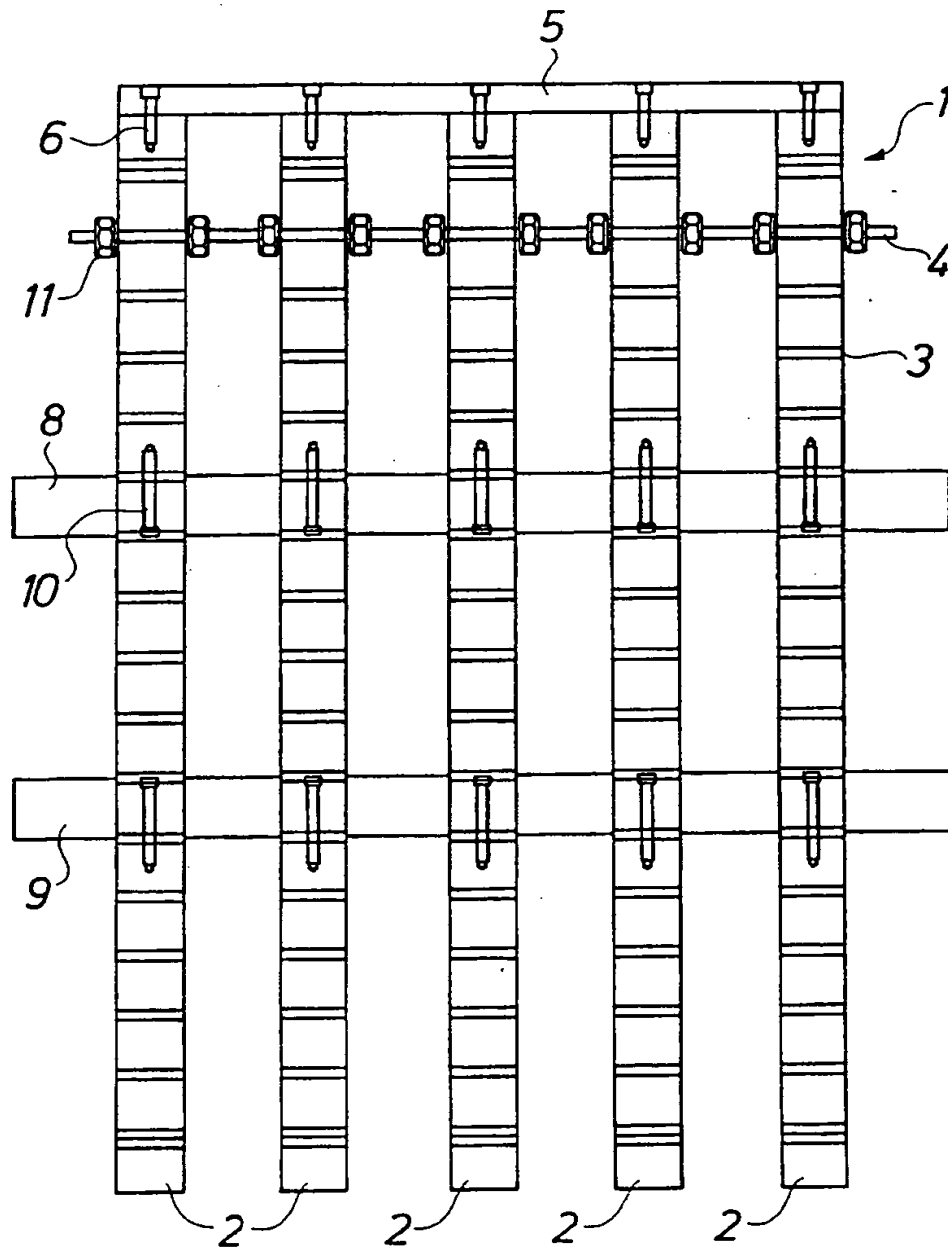


FIG. 2

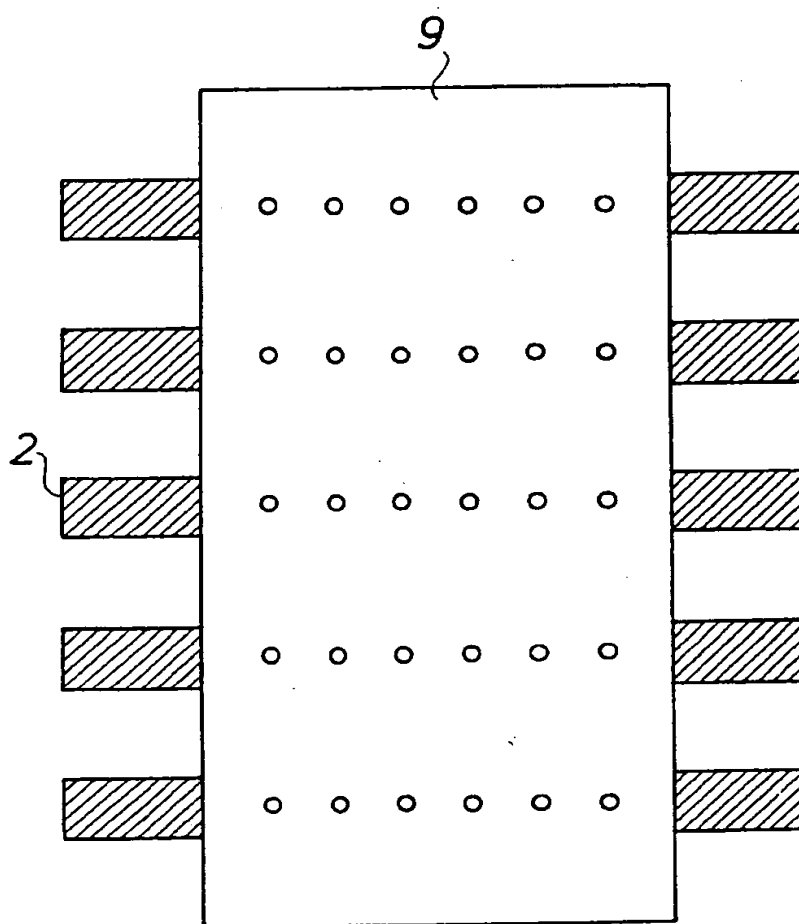


FIG. 3

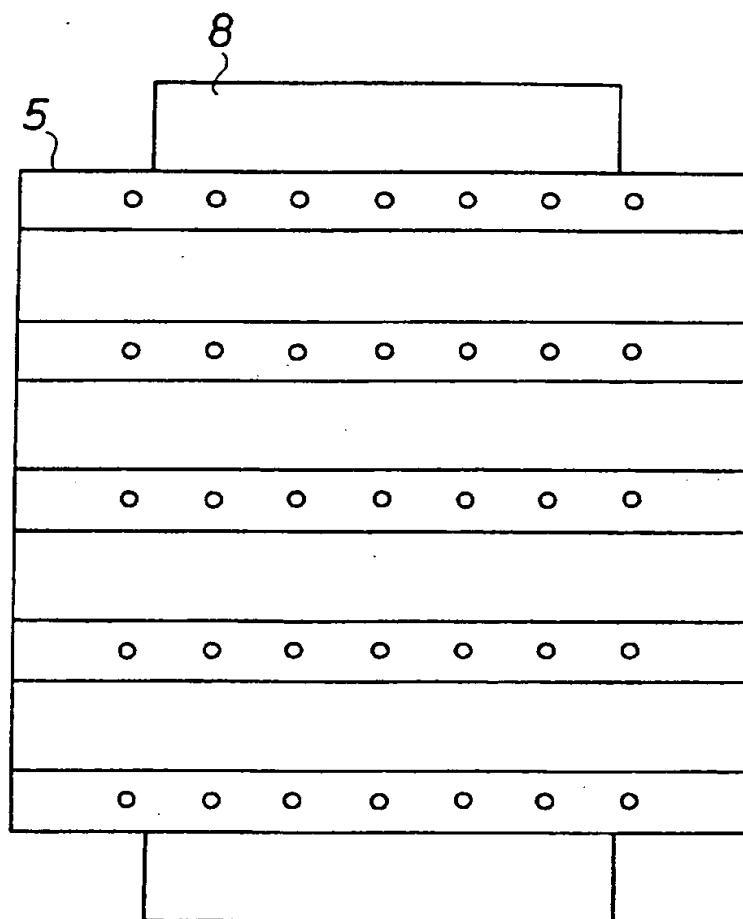


FIG. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 97/01026

A. CLASSIFICATION OF SUBJECT MATTER

IPC6: F16M 1/00 // F16M 5/00
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC6: F16M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	SE 355404 B (SVENSKA INDUSTRIETABLERINGS AB (SVETAB)), 16 April 1973 (16.04.73) --	1-3
X	DE 4326387 A1 (MAN ROLAND DRUCKMASCHINEN AG), 9 February 1995 (09.02.95) --	1-3
X	CA 1233805 A (POPOW, VICTOR P.), 8 March 1988 (08.03.88) -----	1-3

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *B* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

Z document member of the same patent family

Date of the actual completion of the international search

10 Sept 1997

Date of mailing of the international search report

22-09-1997

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

Sune Söderling
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT
Information on patent family members

06/08/97

International application No.
PCT/SE 97/01026

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
SE 355404 B	16/04/73	DE 2315982 A FR 2179461 A JP 49008657 A NL 7304867 A	25/10/73 16/11/73 25/01/74 09/10/73
DE 4326387 A1	09/02/95	NONE	
CA 1233805 A	08/03/88	NONE	